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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,680	04/21/2006	Reinhard Kuhne	KUHNE 3	5695

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EXAMINER	
GIARDINO JR, MARK A	

ART UNIT	PAPER NUMBER
2185	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/576,680	KUHNE, REINHARD	
	Examiner	Art Unit	
	MARK A. GIARDINO JR	2185	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 December 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,6-9,11-13 and 18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 2, 6-9, 11-13, and 18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The Examiner acknowledges the applicant's submission of the amendment dated 12/18/2008. At this point claims 1, 6, 11, and 18 have been amended and claims 3-5 and 14-17 have been cancelled. Thus, claims 1, 2, 6-9, 11-13, and 18 are pending in the instant application.

The instant application having Application No. 10/576,680 has a total of 10 claims pending in the application, there are 2 independent claims and 8 dependent claims, all of which are ready for examination by the examiner.

REJECTIONS NOT BASED ON PRIOR ART

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 recites the limitation "the physical sectors" in the third line of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 1 recites the limitation "the writing" in the sixth line of the claim and "the writing processes" in the eighth line of the claim. There is insufficient antecedent basis for these limitations in the claims, as it is unclear if "the writing" and "the writing processes" refer to the "sector write command" previously mentioned.

Claim 1 recites the limitation "the position" in the ninth line of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 1 recites the limitation "the relevant sector" in the ninth line of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 1 recites the limitation "the physical sector address" in the ninth line of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claims 12 recites the limitation "the valid sectors". There is insufficient antecedent basis for this limitation in the claims.

Claims 12 and 13 recite the limitation "the original memory block". There is insufficient antecedent basis for this limitation in the claims.

Claim 18 recites the limitation "the physical sectors" in the third line of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 18 recites the limitation "the step of writing" in the eighth line of the claim. There is insufficient antecedent basis for this limitation in the claim, as it is unclear if "the step of writing" refers to the "writing data" previously mentioned.

Claim 18 recites the limitation "the relevant sector" in the eleventh line of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 18 recites the limitation "the physical sector address" in the thirteenth line of the claim. There is insufficient antecedent basis for this limitation in the claim.

REJECTIONS BASED ON PRIOR ART

Claim Rejections - 35 USC ' 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. ' 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 6, 7, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Conley (US 2002/0099904).

Regarding Claim 1, Conley teaches a method for writing memory sectors in individually-deletable memory blocks **(the blocks are "individually erasable", Paragraph 0004)** comprising a number of memory sectors **(each block is "further partitioned into individually addressable pages that are the basic unit for reading and programming user data", where the page is analogous to a sector, end of Paragraph 0004)**, whereby access to the physical sectors is achieved by means of an allocation table for address conversion of a logical address into a physical block address and a physical sector address **(see the table of Figure 12 with logical block addresses and corresponding physical pages, and also description of this Figure on Paragraph 0023)**, and whereby when a sector write command is to be carried out, which relates to an already written sector, the writing takes place to an alternative memory block by means of an altered address conversion **(see Figures 7 and 8, where new data is written to the alternative memory block PBN1, and this is done via means of an altered address conversion because individual track of the logical**

page numbers is kept, Paragraph 0053), wherein the writing processes for sectors in the alternative memory block are carried out one by one to adjacent sectors of the alternative memory block **(see Figure 8 and how it progresses to Figure 11, where the pages are written sequentially to adjacent sectors of alternative memory block PBN1, also see description of Figure 11 on Paragraph 0058)** and the position of the relevant sector in the alternative block is stored in the sector table **(sector table in Figure 12)** by organizing the sector table as a search table, each table entry comprising a field for indicating the physical sector address **(PBN1 column of Figure 12, indicating which block the physical address is in)** with a corresponding valid sector position in the alternative block **(the sector [page] position indicated in the 'page' column adjacent to PBN1 in Figure 12)** .

Regarding Claim 2, Conley teaches all limitations of Claim 1, wherein the altered address conversion is carried out by means of a data record with a physical block address and the sector table (see Figure 12, which contains a record of the data with a physical block address and a sector table (indicated by a 'page') in the internal storage of a memory controller (note how the updated data blocks are stored in the memory subsystem, which inherently has some sort of controller, "the subsystem controller...performs a number of functions including the translation between logical addresses received by the memory subsystem from a host, and physical block numbers and page addresses within the memory cell array", Paragraph 0005).

Regarding Claim 6, Conley teaches all limitations of Claim 1, wherein the search table is sorted by physical sector addresses (the table of Figure 12 is clearly

sorted by physical sector address, as the physical sectors indicated by the middle 'page' column is sequential).

Regarding Claim 7, Conley teaches all limitations of Claim 1, wherein the position of the sector within the alternative block is also stored in the administrative part of the sector (see Figure 10, and the 'overhead' section [where the overhead section corresponds to the administrative part] that contains a "page offset overhead data field 41 written into the pages of PBN1 that contain the updated data", Paragraph 0041).

Regarding Claim 18, Conley teaches a method for writing memory sectors in individually-deletable memory blocks **(the blocks are "individually erasable", Paragraph 0004)**, comprising a number of memory sectors **(each block is "further partitioned into individually addressable pages that are the basic unit for reading and programming user data", where the page is analogous to a sector, end of Paragraph 0004)**, whereby access to the physical sectors is achieved by means of an allocation table for address conversion of a logical address into a physical block address and a physical sector address **(see the table of Figure 12 with translations, and also description of this Figure on Paragraph 0023)**, the method comprising:

writing data to an alternative memory block by means of an altered address conversion when a sector write command is to be carried out to an already written sector **(see Figures 7 and 8, where new data is written to the alternative memory block PBN1, and this is done via means of an altered address conversion because individual track of the logical page numbers is kept, Paragraph 0053)**, wherein the step of writing for sectors in the alternative memory block are carried out

one by one to adjacent sectors of the alternative memory block **(see Figure 8 and how it progresses to Figure 11, where the pages are written sequentially to adjacent sectors of alternative memory block PBN1, also see description of Figure 11 on Paragraph 0058)**;

and storing the position of the relevant sector in the alternative block in a sector table **(sector table in Figure 12)** by organizing the sector table as a search table, each table entry comprising a field for indicating the physical sector address **(PBN1 column of Figure 12, indicating which block the physical address is in)** and a corresponding valid sector position in the alternative block **(the sector [page] position indicated in the 'page' column adjacent to PBN1 in Figure 12)**.

Claim Rejections - 35 USC ' 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 8, 9, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Conley in view of Estakhri (US 5,930,815).

Regarding Claim 8, Conley teaches all limitations of Claim 7 as discussed above. However, Conley does not explicitly teach the sector table reconstructed from

the sector positions stored in the administrative part when the memory system is restarted.

Estakhri teaches wherein the sector table of a block is reconstructed from the sector positions stored in the administrative part when the memory system is restarted (table 714 which contains the sector tables of the blocks is stored in RAM, see Column 11 Lines 36-47, and this RAM is continually shadowed and restored on power up, see Column 10 Line 66 to Column 11 Line 15).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to which the subject matter pertains to have shadowed and restored the sector tables (as in Estakhri) in the method of Conley because doing so ensures that important data is not lost during a power outage.

Regarding Claim 9, Conley and Estakhri teaches all limitations of Claim 8, wherein when restarting, the sector positions are registered in the sector table (table 714 which includes the sector positions in the sector table is stored in RAM, see Column 11 Lines 36-47, and this RAM is continually shadowed and restored on power up, see Column 10 Line 66 to Column 11 Line 15 in Estakhri).

Regarding Claim 12, Conley teaches all limitations of Claim 1 as discussed above. However, Conley does not explicitly teach searching for a new alternative block once the sector table is filled.

Estakhri teaches wherein, as soon as the sector table is filled (according to a user defined threshold, Column 17 Lines 39-41 in Estakhri), a new alternative block is searched for, to which the valid sectors from the original memory block, together with

those from the previous alternative block, are then copied (Column 17 Lines 42-49 in Estakhri).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to which the subject matter pertains to have implemented the searching for an alternative block (as in Estakhri) once the sector table (of Conley's method) was filled because the benefits of the fast writing without erasing a block can be maintained even after the sector table becomes full.

Regarding Claim 13, Estakhri and Conley teach all limitations of Claim 12, wherein the new alternative block is registered in the allocation table as the original memory block and the previous memory and alternative blocks are cleared for deletion (Column 17 Lines 52-54).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Conley in view of Asnaashari (US 5,928,370).

Regarding Claims 11, Conley meets all limitations of Claim 1 as discussed above. However, Conley does not teach a memory block containing 256 sectors or index and search tables having 32 bytes. Asnaashari teaches a flash device that contains a sector size of 256 bytes (Column 3 Lines 14-21 in Asnaashari). Since Conley teaches one bit per sector in his index and search table, the size of each table for such a sector size is 256 bits, or 32 bytes. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have used a sector size of 256 bytes (as in Asnaashari) in the sector table of Conley. As motivation, Conley teaches 512 bytes, but states that other sizes may be used (Paragraph 0004), and

since 256 was a well known sector size in the art, one of ordinary skill would have found it obvious to use such a sector size. Also, limitations relating to size are not sufficient to distinguish over prior art, see MPEP 2144.04 (IV) A.

ARGUMENTS CONCERNING PRIOR ART REJECTIONS

Rejections - USC 102/103

Regarding Applicant's argument that Conley does not teach a search table, each table entry of which indicates the physical sector address with a corresponding valid sector position in the alternative block has been considered but it is not persuasive. In claims 1 and 18, the limitations of the search table are that each entry in the table must have a physical sector address with a corresponding valid sector position in the alternative block, which is shown by Conley in Figure 12, where the physical sector address is indicated by the 'PBN1 [physical block number]' column and the corresponding valid sector position corresponding to the adjacent 'Page' column in Figure 12, and the table is at least nominally searched to find the page block where the newly written data is.

Regarding Applicant's argument that Conley does not disclose a search table to find the valid sectors of a multiple written memory block has been considered but is not persuasive. Nowhere in Claim 1 is a search table used to find or search valid sectors of a memory block. Further, the claim does not address a 'multiple written memory block', but rather an 'already written sector', which is not the same as a multiple written memory block. Although the claims are interpreted in light of the specification,

limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

CLOSING COMMENTS

STATUS OF CLAIMS IN THE APPLICATION

The following is a summary of the treatment and status of all claims in the application as recommended by **M.P.E.P. ' 707.07(i)**:

CLAIMS NO LONGER IN THE APPLICATION

Claims 3-5, 10, and 14-17 were cancelled by the amendment dated 12/18/2008.

CLAIMS REJECTED IN THE APPLICATION

Per the instant office action, claims 1, 2, 6-9, 11-13, and 18 have received a second action on the merits and are subject of a second action non-final.

DIRECTION OF FUTURE CORRESPONDENCES

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Anthony Giardino whose telephone number is (571) 270-3565 and can normally be reached on Monday - Thursday 7:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Sanjiv Shah can be reached on (571) 272 - 4098. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M.A. Giardino

/M.G./

Patent Examiner
Art Unit 2185

April 30, 2009

/Stephen Elmore/
Primary Examiner, Art Unit 2185